TORQ Analysis of Network and Computer Systems Administrators to Computer Support Specialists

INPUT SECTION:													
Transfer	Title					O*NET		Filt	ilters				
From Title:		ork an nistrat		uter System	ıs	15-1071	.00	Abi			Importance LeveL: 50		Veight:
To Title:	Comp	Computer Support Specialists				15-1041	.00	Skil	ls:	Impoi LeveL	rtance : 69	V 1	Veight:
Labor Market Area:	Main	Maine Statewide						Kno	owledge:	Impoi Level:	rtance 69	V 1	Veight:
OUTPUT SECTION:													
Grand 1	Grand TORQ:											-	90
Ability TORQ				Skills TORC)	Knowledge TORQ							
Level			94	Level			8	88	Level				89
Gaps To N	larrow i	f Possi	ble	Up	grade Th	These Skills Knowledge			wledge	e to Add			
Ability	Level	Gap	Impt	Skill	Level	Gap	Imp	ot	Knowle	edge	Level	Gap	Impt
Written Expression Speech Clarity Written	55 44	3	68 72	Writing Speaking	69 61	8		76 75	Custom and Persona Service	al	71	4	86
Comprehension	69	2	81						Enginee and Techno	ering	53	4	77
									English Langua	ge	57	1	73
15)(5)	- /II #DC D	T 4 8 1 0 5 1	<u> </u>						Mathen		56	1	69
LEVEL and IMPI	LEVEL and IMPT (IMPORTANCE) refer to the Target Computer Support Specialists. GAP refers to level difference between Network and Computer Systems Administrators and Computer Support Specialists.												

ASK ANALYSIS Network and Computer Support Specialists Description Computer Systems Importance Administrators Oral Expression 73 62 84 Inductive Reasoning 73 64 84 Oral Comprehension 66 64 81 Written Comprehension 67 69 81

Experience & Education Comparison								
Rela	ted Work Experience Comp	arison	Required Education Level Comparison					
Description	Network and Computer Systems Administrators	etwork and Computer Support Specialists Computer Support Specialists Description		Network and Comp Description Systems Administrators Network and Comp Suppo				
10+ years	0%	O%	Doctoral	0%	0%			
8-10 years	3%	0%		0%	0%			
6-8 years	3%	0%	Professional Degree					
4-6 years	23%	0%	Post-Masters Cert	0%	0%			
	470/		Master's Degree	4%	0%			
2-4 years	4 years 47%		Post-Bachelor Cert	9%	0%			
1-2 years	15%	9%	Bachelors	42%	24%			
6-12	1%	1%	AA or Equiv	14%	5%			
months	170	1 70	Some College	9%	1%			
3-6 months	3%	0%	Post-Secondary	100/				
1-3 months	0%	0%	Certificate	18%	69%			
0-1 month	1%	0%	High Scool Diploma	1%	0%			
None	0%	1%	or GED	1 70				
			No HSD or GED	0%	0%			

Network and Computer Systems Administrators

Computer Support Specialists

Most Common Educational/Training Requirement:

Bachelor's degree

Associate degree

Job Zone Comparison

4 - Job Zone Four: Considerable Preparation Needed A minimum of two to four years of work-related skill, knowledge, or experience is needed for these occupations. For example, an accountant must complete four years of college and work for several years in accounting to be considered qualified.

Most of these occupations require a four - year bachelor's degree, but some do not.

Employees in these occupations usually need several years of work-related experience, on-the-job training, and/or vocational training.

3 - Job Zone Three: Medium Preparation Needed Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.

Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.

Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.

Tasks

Core Tasks

Generalized Work Activities:

- Interacting With Computers Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.
- Updating and Using Relevant Knowledge -Keeping up-to-date technically and applying new knowledge to your job.
- · Getting Information Observing, receiving, and otherwise obtaining information from all relevant sources.
- Making Decisions and Solving Problems -

Core Tasks

Generalized Work Activities:

- Interacting With Computers Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.
- Getting Information Observing, receiving, and otherwise obtaining information from all relevant sources.
- Updating and Using Relevant Knowledge -Keeping up-to-date technically and applying new knowledge to your job.
- Making Decisions and Solving Problems -



Analyzing information and evaluating results to choose the best solution and solve problems.

 Thinking Creatively - Developing, designing, or creating new applications, ideas, relationships, systems, or products, including artistic contributions.

Specific Tasks

Occupation Specific Tasks:

- Confer with users to discuss issues such as computer data access needs, security violations, and programming changes.
- Coordinate implementation of computer system plan with establishment personnel and outside vendors.
- Develop plans to safeguard computer files against accidental or unauthorized modification, destruction, or disclosure and to meet emergency data processing needs
- Document computer security and emergency measures policies, procedures, and tests.
- Encrypt data transmissions and erect firewalls to conceal confidential information as it is being transmitted and to keep out tainted digital transfers.
- Maintain permanent fleet cryptologic and carry-on direct support systems required in special land, sea surface and subsurface operations.
- Modify computer security files to incorporate new software, correct errors, or change individual access status.
- Monitor current reports of computer viruses to determine when to update virus protection systems.
- Monitor use of data files and regulate access to safeguard information in computer files.
- Perform risk assessments and execute tests of data processing system to ensure functioning of data processing activities and security measures.
- Review violations of computer security procedures and discuss procedures with violators to ensure violations are not repeated.
- Train users and promote security awareness to ensure system security and to improve server and network efficiency.

Detailed Tasks

Detailed Work Activities:

- adjust computer operation system
- communicate technical information
- conduct computer diagnostics to determine nature of problems
- confer with personnel to discuss security violations or programming

- Analyzing information and evaluating results to choose the best solution and solve problems.
- Communicating with Persons Outside Organization - Communicating with people outside the organization, representing the organization to customers, the public, government, and other external sources. This information can be exchanged in person, in writing, or by telephone or e-mail.

Specific Tasks

Occupation Specific Tasks:

- Answer user inquiries regarding computer software or hardware operation to resolve problems.
- Conduct office automation feasibility studies, including workflow analysis, space design, or cost comparison analysis.
- Confer with staff, users, and management to establish requirements for new systems or modifications.
- Develop training materials and procedures, or train users in the proper use of hardware or software.
- Enter commands and observe system functioning to verify correct operations and detect errors.
- Inspect equipment and read order sheets to prepare for delivery to users.
- Install and perform minor repairs to hardware, software, or peripheral equipment, following design or installation specifications.
- Maintain records of daily data communication transactions, problems and remedial actions taken, or installation activities.
- Modify and customize commercial programs for internal needs.
- Oversee the daily performance of computer systems.
- Prepare evaluations of software or hardware, and recommend improvements or upgrades.
- Read technical manuals, confer with users, or conduct computer diagnostics to investigate and resolve problems or to provide technical assistance and support.
- Read trade magazines and technical manuals, or attend conferences and seminars to maintain knowledge of hardware and software.
- Refer major hardware or software problems or defective products to vendors or technicians for service.
- Set up equipment for employee use, performing or ensuring proper installation of cables, operating systems, or appropriate software.
- Supervise and coordinate workers engaged in problem-solving, monitoring,



- develop policies, procedures, methods, or standards
- evaluate computer system user requests or requirements
- follow confidentiality procedures
- follow data security procedures
- identify appropriate software for project
- install electronic equipment, components, or systems
- install security measures
- maintain or repair computers or related equipment
- monitor use of computer data files to safeguard information
- · obtain information from individuals
- perform minor repairs to hardware, software, or peripheral equipment
- plan computer security measures
- prepare instruction manuals
- provide technical support to computer users
- revise or correct errors in computer programs, software, or systems
- test computer programs or systems
- train workers in use of computer and related equipment
- understand computer equipment operating manuals
- understand technical information for electronic repair work
- use computers to enter, access or retrieve data
- use interpersonal communication techniques
- use knowledge of investigation techniques
- use precision tools in electronics repair
- use spreadsheet software
- use word processing or desktop publishing software

Technology - Examples

Access software

- Access management software
- Mac HelpMate
- Remote desktop control software

Administration software

- Cisco Systems CiscoWorks
- Element management software
- Hewlett-Packard HP Network Node Manager
- Network address management software
- Network documentation software

and installing data communication equipment and software.

Detailed Tasks

Detailed Work Activities:

- adjust computer operation system
- assist co-workers with software problems
- communicate technical information
- conduct computer diagnostics to determine nature of problems
- conduct training for personnel
- configure computers in industrial or manufacturing setting
- consult with staff or users to identify operating procedure problems
- evaluate computer system user requests or requirements
- evaluate prototype computer software systems
- follow data security procedures
- follow data storage procedures
- identify appropriate software for project
- install computer programs
- install hardware, software, or peripheral equipment
- maintain or repair computers or related equipment
- monitor computer operation
- · monitor operating conditions
- perform minor repairs to hardware, software, or peripheral equipment
- program computers using existing software
- provide technical computer training
- provide technical support to computer users
- recommend purchase or repair of furnishings or equipment
- recommend software or hardware purchases
- select business applications for computers
- select software for clerical activities
- test computer programs or systems
- train workers in use of computer and related equipment
- train workers in use of equipment
- understand computer equipment operating manuals
- use computer networking technology
- use computers to enter, access or retrieve data
- use desktop publishing software
- use geographical information system (GIS) software
- use interpersonal communication techniques



- Network management software
- Network shutdown software
- Simple network management protocol SNMP software
- SolarWinds software

Analytical or scientific software

• Root cause analysis software

Authentication server software

• Password management software

Backup or archival software

- Backup and archival software
- Symantec Ghost Solution Suite
- System and data disaster recovery software
- VERITAS Backup Exec

Compiler and decompiler software

• Command interpreters

Computer based training software

• Computer based training software

Configuration management software

- Application management software
- Automated installation software
- Configuration management software
- Microsoft Windows Sysprep
- Patch and update management software
- Systems and applications migration software

Data base management system software

• Oracle software

Data base reporting software

• ReCrystallize Crystal Reports

Data base user interface and query software

• Structured query language SQL

Desktop communications software

• Secure shell SSH software

Development environment software

• C

Enterprise application integration software

• Enterprise application integration EAI software

- use knowledge of mainframe computers
- use relational database software
- use spreadsheet software
- use word processing or desktop publishing software
- write computer software, programs, or code

Technology - Examples

Access software

• Mac HelpMate

Administration software

- Element management software
- SolarWinds software

Authentication server software

Password management software

Backup or archival software

- Backup and archival software
- Disaster recovery software
- Microsoft Volume Shadow Copy Service
- Symantec LiveState

Calendar and scheduling software

Calendar and scheduling software

Configuration management software

- Automated installation software
- Configuration management software
- Deployment software
- Patch management software

Data base management system software

• Database management software

Data base user interface and query software

- Database software
- Software asset management SAM software

Desktop communications software

- CrossTec NetOp Remote Control
- Remote control software
- Stac Software ReachOut
- Symantec pcAnywhere

Desktop publishing software

• Adobe Systems Adobe Distiller

Systems integration software Gateway software Mcrosoft Windows Terminal Services Access Manager Graphical user interface development software Tk software Helpdesk or call center software Help desk software
Mcrosoft Windows Terminal Services Access Manager Graphical user interface development software Tk software Helpdesk or call center software
Manager Graphical user interface development software • Tk software Helpdesk or call center software
Tk software Helpdesk or call center software
Helpdesk or call center software
Help desk software
nternet directory services software
Active directory software
Berkeley Internet Domain Name BIND software
Domain name system DNS software
Network addressable storage NAS software
Network monitoring software
Dartware InterMapper
• Ethereal
• IBM Director
• IBM NetView
• Lavalys Everest
Micromuse NetCool
Multi-router traffic grapher MRTG software
Nagios software
 Network and application load and performance testing software
Network and component performance analysis software
Network availability monitoring software
 Network modeling, mapping, and analysis software
Network traffic flow monitoring and analysis software
Network traffic probe software
Novell Netware Management Station
Online traffic calculator software
Packet tracing software
Quest BigBrother
Quest BigBrother Quest Foglight

Ele	ctronic mail software
	Email software
File	system software
	Desktop partitioning software
	Symantec Norton Utilities
Hel	pdesk or call center software
	Call center software
	Help desk software
Inf	ormation retrieval or search software
	Information systems integration software
Int	ernet browser software
	Internet browser software
Int	ernet directory services software
	Active directory software
	Domain name system DNS software
	Network directory services software

• Media storage management software

Spreadsheet software

• Spreadsheet software

Storage networking software



- Nomote monitoring software
- Sun Microsystems NetManage
- Tcpdump software
- Veritas NerveCenter
- ZABBLX software

Network operating system enhancement software

- Management information base MB software
- Network, server and operating system optimization software
- Operating system process control software

Network security and virtual private network VPN equipment software

• Firewall software

Network security or virtual private network VPN management software

- Citrix MetaFrame
- Intrusion prevention system IPS software
- Network and system vulnerability assessment software
- Network intrusion detection software
- OpenService Open NerveCenter
- Security incident handling software
- Virtual local area network management software

Object or component oriented development software

- Practical extraction and reporting language Perl
- Python

Operating system software

- Kornshell
- Shell script

Optical network management software

• Optical network management software

Pattern design software

· Diagramming software

Platform interconnectivity software

Virtual network computing VNC software

Program testing software

• Computer system diagnostics software

- Encryption software
- Virus scanning software

Word processing software

• Word processing software

Tools - Examples

- Computer tool kits
- Desktop computers
- MS-DOS-bootable disks
- Redundant array of independent disks RAID
- Mainframe computers
- Network analyzers
- Notebook computers
- · Personal digital assistants PDA
- Power meters
- Punchdown tools
- Reflectometers
- Screwdrivers
- · Digital tapes
- Wire crimpers



 Mercury 	Interactive	LoadRunner

Requirements analysis and system architecture software

• Requirements management software

Storage networking software

• Storage area network SAN software

Transaction security and virus protection software

- Encryption software
- Honeypot
- Packet filter software
- Ping software
- Root kit detection software

Tools - Examples

- Cable verifiers
- · Computer tool kits
- Desktop computers
- Redundant array of independent disks RAID systems
- Optical spectrum analyzers
- Mainframe computers
- Asynchronous transfer mode ATM analyzers
- Network switches
- Notebook computers
- Power meters
- Protocol analyzers
- Punchdown tools
- Optical time domain reflectometers
- Screwdrivers
- Load balancers
- Tape libraries
- Wire crimpers

Labor Market Comparison



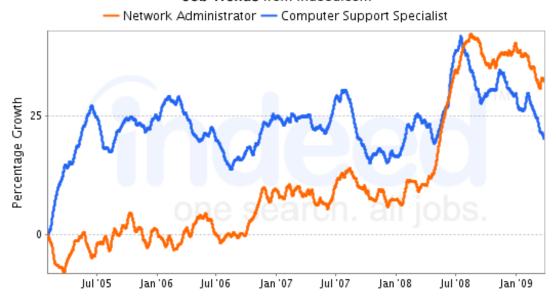
Description	Network and Computer Systems Administrators	Computer Support Specialists	Difference
Median Wage	\$ 57,690	\$ 40,200	\$(17,490)
10th Percentile Wage	\$ 40,040	\$ 27,070	\$(12,970)
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	\$ 68,360	\$ 47,830	\$(20,530)
90th Percentile Wage	\$ 78,720	\$ 55,380	\$(23, 340)
Mean Wage	\$ 58,030	\$ 40,600	\$(17,430)
Total Employment - 2007	1,070	1,670	600
Employment Base - 2006	1,077	1,690	613
Projected Employment - 2016	1,267	1,778	511
Projected Job Growth - 2006-2016	17.6 %	5.2 %	-12.4 %
Projected Annual Openings - 2006-2016	44	61	17

National Job Posting Trends

Trend for Network and Computer Systems Administrators

Trend for Computer Support Specialists

Job Trends from Indeed.com



Data from Indeed

Recommended Programs



Agricultural Business Technology

Agricultural Business Technology. A program that prepares individuals to perform specialized support functions related to agricultural business offices and operations and to operate agricultural office equipment, software, and information systems. Includes instruction in basic agricultural business principles, office management, equipment operation, standard software, and database management.

No schools available for the program

Data Processing and Data Processing Technology/Technician

Data Processing and Data Processing Technology/Technician. A program that prepares individuals to master and use computer software programs and applications for inputting, verifying, organizing, storing, retrieving, transforming (changing, updating, and deleting), and extracting information. Includes instruction in using various operating system configurations and in types of data entry such as word processing, spreadsheets, calculators, management programs, design programs, database programs, and research programs.

No schools available for the program

Information Sciences and Systems

Information Science/Studies. A program that focuses on the theory, organization, and process of information collection, transmission, and utilization in traditional and electronic forms. Includes instruction in information classification and organization; information storage and processing; transmission, transfer, and signaling; communications and networking; systems planning and design; human interfacing and use analysis; database development; information policy analysis; and related aspects of hardware, software, economics, social factors, and capacity.

Institution	Address	City	URL
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu

Computer Hardware Technology/Technician

Computer Hardware Technology/Technician. A program that prepares individuals to apply basic engineering principles and technical skills to support engineers in designing computer hardware and peripheral systems. Includes instruction in computer systems design, computer architecture, computer electronics, processors, peripherals, testing equipment, and computer manufacturing processes.

No schools available for the program

Computer Software Technology/Technician

Computer Software Technology/Technician. A program that prepares individuals to apply basic engineering principles and technical skills to support engineers in developing, implementing, and evaluation computer software and program applications. Includes instruction in computer programming, programming languages, databases, user interfaces, networking and warehousing, encryption and security, software testing and evaluation, and customization.

No schools available for the program

Accounting and Computer Science

Accounting and Computer Science. A program that combines accounting with computer science and/or computer studies. No schools available for the program

Medical Office Computer Specialist/Assistant

Medical Office Computer Specialist/Assistant. A program that prepares individuals to apply computer programming, troubleshooting, and information technology skills to the installation, maintenance, and upgrade of standard, customized, or proprietary medical software and associated hardware. Includes instruction in computer programming, systems analysis, networking, telecommunications, medical records and informatics software applications, information technology, systems administration, computer security, and applicable regulations and certifications or licenses.

No schools available for the program

Management Information Systems and Business Data P

Management Information Systems, General. A program that generally prepares individuals to provide and manage data systems and related facilities for processing and retrieving internal business information; select systems and train personnel; and respond to external data requests. Includes instruction in cost and accounting information systems, management control systems, personnel information systems, data storage and security, business systems networking, report preparation, computer facilities and equipment operation and maintenance, operator supervision and training, and management information systems policy and planning.

Institution	Address	City	URL
Kennebec Valley Community College	92 Western Ave	Fairfield	www.kvcc.me.edu
Kennebec Valley Community College	92 Western Ave	Fairfield	www.kvcc.me.edu



Andover College	901 Washington Ave	Portland	WWW.ANDOVERCOLLEGE.edu
Andover College	901 Washington Ave	Portland	WWW.ANDOVERCOLLEGE.edu
York County Community College	112 College Drive	Wells	www.yccc.edu

Maine St	atewide Promotio	n Oppor	tunities	s for Networl	k and Comp	outer Syste	ms Adm	inistrators
O* NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings
15-1071.00	Network and Computer Systems Administrators	100	4	1,070	\$57,690.00	\$0.00	18%	44
15-1051.00	Computer Systems Analysts	93	4	1,650	\$69, 340.00	\$11,650.00	20%	78
15-1081.00	Network Systems and Data Communications Analysts	91	3	610	\$59,790.00	\$2,100.00	47%	54
15-1021.00	Computer Programmers	89	4	720	\$58, 240.00	\$550.00	-12%	16
15-1061.00	Database Administrators	89	4	300	\$60, 260.00	\$2,570.00	20%	11
15-1032.00	Computer Software Engineers, Systems Software	86	4	290	\$73,410.00	\$15,720.00	11%	8
15-1031.00	Computer Software Engineers, Applications	84	4	1,060	\$63,750.00	\$6,060.00	30%	47
15-1071.01	Computer Security Specialists	83	4	1,070	\$57,690.00	\$0.00	18%	44
17-2072.00	Electronics Engineers, Except Computer	82	4	210	\$76, 420.00	\$18,730.00	-26%	4
17-2071.00	Electrical Engineers	80	4	260	\$73,050.00	\$15,360.00	-10%	6
11-3021.00	Computer and Information Systems Managers	79	5	870	\$83,130.00	\$25, 440.00	8%	21
17-2031.00	Biomedical Engineers	78	4	20	\$86, 560.00	\$28,870.00	-10%	1
27-1011.00	Art Directors	78	4	90	\$66,570.00	\$8,880.00	10%	7
11-3071.01	Transportation Managers	77	3	710	\$62,270.00	\$4,580.00	5%	25
13-1081.00	Logisticians	77	4	190	\$59,120.00	\$1,430.00	4%	4

Top Industries	s for Con	nputer Sup	port Speciali	sts	
Industry	NAICS	% in Industry	Employment	Projected Employment	% Change
Computer systems design and related services	541500	15.54%	85, 860	104, 333	21.51%
Colleges, universities, and professional schools, public and private	611300	5.81%	32,072	35, 880	11.87%
Elementary and secondary schools, public and private	611100	5.16%	28,526	30,060	5.38%
Management of companies and enterprises	551100	4.54%	25,054	28,882	15.28%
Software publishers	511200	3.79%	20,951	24, 278	15.88%
Employment services	561300	2.98%	16,453	20,824	26.56%
Local government, excluding education and hospitals	939300	2.89%	15,984	17,956	12.34%
Professional and commercial equipment and supplies merchant wholesalers	423400	2.58%	14,246	14,946	4.91%
Federal government, excluding postal service	919999	2.56%	14,152	13,378	-5.47%
Electronics and appliance stores	443100	2.09%	11,573	10,577	-8.61%
State government, excluding education and hospitals	929200	2.06%	11,375	11,162	-1.87%
Internet service providers and Web search portals	518100	1.98%	10,935	7,752	-29.11%
General medical and surgical hospitals, public and private	622100	1.92%	10,607	11,743	10.71%
Management, scientific, and technical consulting services	541600	1.88%	10,402	18,571	78.52%
Depository credit intermediation	522100	1.84%	10,158	10, 357	1.95%

Top Industries for Network and Computer Systems Administrators									
Industry	NAICS	% in Industry	Employment	Projected Employment	% Change				
Computer systems design and related services	541500	14.73%	45, 535	67,628	48.52%				
Management of companies and enterprises	551100	6.04%	18,676	23,682	26.81%				
Colleges, universities, and professional schools, public and private	611300	4.65%	14,385	17,702	23.06%				
Elementary and secondary schools, public and private	611100	3.97%	12,261	14,213	15.92%				
Local government, excluding education and hospitals	939300	3. 28%	10,144	12,535	23.57%				
Wired telecommunications carriers	517100	3.15%	9,751	8,420	-13.64%				
Depository credit intermediation	522100	2.72%	8,418	9, 441	12.15%				
Data processing, hosting, and related services	518200	2.61%	8,062	11,988	48.71%				

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Federal government, excluding postal service		2.59%	8,022	8,342	3.99%
Management, scientific, and technical consulting services		2.45%	7,589	14,903	96.38%
General medical and surgical hospitals, public and private	622100	1.96%	6,065	7,386	21.78%
Professional and commercial equipment and supplies merchant wholesalers	423400	1.86%	5,749	7,372	28.23%
State government, excluding education and hospitals	929200	1.78%	5, 499	5,936	7.94%
Internet service providers and Web search portals	518100	1.66%	5,146	4,013	-22.02%
Software publishers	511200	1.63%	5,030	7,125	41.63%